

Application No. 10/660,003
Response Dated: December 23, 2005
In Reply to Final Office Action dated: August 23, 2005

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listing, of claims in the application:

1. (Currently Amended) A substrate for a display device, the substrate comprising:
a first substrate including a display region and a peripheral region adjacent to the display region, the display region having a plurality of pixels, a plurality of data lines and a plurality of scan lines, the peripheral region having a first peripheral region adjacent to first ends of the data lines and a second peripheral region adjacent to first ends of the scan lines;

a driver section including a scan driver circuit and a data driver circuit, the scan driver circuit and the data driver circuit formed in the first peripheral region, the scan driver circuit providing the scan lines with a scan driving signal, and the data driver circuit providing the data lines with a data signal; and

a first connecting part, formed in the second peripheral region to be coupled to the first ends of the scan lines, the first connecting part including a plurality of groups, each of the groups disposed in first-layers different from each other, the scan driving signal being applied to the first connecting part.

2. (Original) The substrate of claim 1, wherein the first connecting part includes:
a first group having a plurality of first connecting lines formed from a same layer as the scan lines; and

a second group having a plurality of second connecting lines formed from a same layer as the data lines.

3. (Original) The substrate of claim 2, wherein each of the first connecting lines partly overlaps with at least one of the second connecting lines.

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4. (Original) The substrate of claim 2, wherein the substrate further comprises a first insulation layer, interposed between the first and second connecting lines, for electrically insulating the first connecting lines from the second connecting lines.

5. (Original) The substrate of claim 4, wherein the pixels respectively include a switching device coupled to one of the data lines and one of the scan lines, the switching device has a control electrode, a first current electrode, a second current electrode, a second insulation layer, a semiconductor layer, a second insulating layer formed on the control electrode, the semiconductor layer formed on the second insulation layer, the first and second current electrodes formed on the semiconductor layer to be separated from each other by a predetermined distance.

6. (Original) The substrate of claim 5, wherein the first insulation layer is a same layer as the second insulation layer.

7. (Original) The substrate of claim 5, wherein the first insulation layer includes the second insulation layer and the semiconductor layer.

8. (Original) The substrate of claim 7, wherein the semiconductor layer corresponds to the first connecting lines.

9. (Original) The substrate of claim 4, wherein the first insulation layer includes a contact hole for exposing the first ends of the scan lines so that the first connecting lines are electrically connected to the first ends of the scan lines through the contact hole.

10. (Currently Amended) The substrate of claim 1, wherein the substrate further includes a second connecting part, the second connecting part is formed in a third peripheral region, is coupled to second ends of the scan lines and includes a plurality of third groups disposed in second layers different from each other, the third peripheral

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region is adjacent to the second ends of the scan lines, the scan driving signal is applied to the second connecting part.

11. (Original) The substrate of claim 10, wherein the first connecting part is electrically coupled to odd numbered scan lines, and the second connecting part is electrically coupled to even numbered scan lines.

12. (Currently Amended) A liquid crystal display device comprising:

a liquid crystal display panel including a first substrate, a second substrate facing the first substrate, and a liquid crystal layer disposed between the first and second substrates, the first substrate including a display region and a peripheral region adjacent to the display region, the display region having a plurality of pixels, a plurality of data lines and a plurality of scan lines, the peripheral region having a first peripheral region adjacent to first ends of the data lines and a second peripheral region adjacent to first ends of the scan lines;

a driver section including a scan driver circuit and a data driver circuit, the scan driver circuit and the data driver circuit formed in the first region, the scan driver circuit providing the scan lines with a scan driving signal, and the data driver circuit providing the data lines with a data signal; and

a first connecting part, formed in the second region to be coupled to the first ends of the scan lines, the first connecting part including a plurality of groups, each of the groups disposed in first-layers different from each other, the scan driving signal being applied to the first connecting part.

13. (Original) The substrate of claim 12, wherein the first connecting part includes:

a first group having a plurality of first connecting lines formed from a same layer as the scan lines; and

a second group having a plurality of second connecting lines formed from a same layer as the data lines.

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14. (Original) The substrate of claim 12, wherein each of the first connecting lines partly overlaps with at least one of the second connecting lines.

15. (Original) The substrate of claim 12, wherein the substrate further comprises a first insulation layer, interposed between the first and second connecting lines, for electrically insulating the first connecting lines from the second connecting lines.

16. (Original) The substrate of claim 15, wherein the pixels respectively include a switching device coupled to one of the data lines and one of the scan lines, the switching device has a control electrode, a first current electrode, a second current electrode, a second insulation layer, a semiconductor layer, the second insulating layer formed on the control electrode, the semiconductor formed on the second insulation layer, the first and second current electrode formed on the semiconductor layer to be separated from each other by a predetermined distance.

17. (Original) The substrate of claim 16, wherein the first insulation layer is a same layer as the second insulation layer.

18. (Original) The substrate of claim 16, wherein the first insulation layer includes the second insulation layer and the semiconductor layer.

19. (Original) The substrate of claim 18, wherein the semiconductor layer corresponds to the first connecting lines.

20. (Original) The substrate of claim 15, wherein the first insulation layer includes a contact hole for exposing the first ends of at least one of the scan lines so that the first connecting lines are electrically coupled to the first ends of said at least one of the scan lines through the contact hole.

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21. (Currently Amended) The substrate of claim 12, wherein the substrate further includes a second connecting part, the second connecting part is formed in a third peripheral region, is coupled to second ends of the scan lines and includes a plurality of third groups disposed in ~~second~~ layers different from each other, the third peripheral region is adjacent to the second ends of the scan lines, and the scan driving signal is applied to the second connecting part.

22. (Original) The substrate of claim 21, wherein the first connecting part is electrically coupled to odd numbered scan lines, and the second connecting part is electrically coupled to even numbered scan lines.

23. (Currently Amended) A method of manufacturing a liquid crystal display device, the method comprising:

forming a first substrate including a display region and a peripheral region adjacent to the display region, the display region having a plurality of data lines, a plurality of scan lines, and a plurality of pixels, each of the pixels having a switching device electrically coupled to one of the scan lines and one of the data lines, wherein forming a first substrate comprises:

forming a first metal layer in the display region and the peripheral region;

patterning the first metal layer to form the scan lines and gate electrodes branched from the scan lines on the display region and to form a plurality of first connecting lines in the peripheral region so that the first connection lines are electrically and directly coupled to a first group of the scan lines;

forming an insulation layer, an active layer and a contact layer on the first substrate on which the scan lines, the gate electrodes, and the first connecting lines are formed;

patterning the active layer and the contact layer to form an active pattern and a contact pattern;

forming a second metal layer on the first substrate on which the insulation layer, the active pattern, and the contact pattern are formed; and

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patterning the second metal layer to form the data lines, source electrodes branched from the data lines, and drain electrodes spaced apart from the source electrode on the display region, and to form a plurality of second connecting lines in the peripheral region so that the second connecting lines are electrically and directly coupled to a second group of the scan lines, wherein each of the first connecting lines partly overlaps with at least one of the second connecting lines; combining the first substrate with a second substrate; and interposing a liquid crystal between the first and second substrates.

24. (Previously Presented) The method of claim 23, wherein the first connecting lines are formed from a same layer as the scan lines; and the second connecting lines are formed from a same layer as the data lines.

25. (Canceled)

26. (Previously Presented) The method of claim 23, wherein patterning the active layer and the contact layer includes forming a double insulation layer on the peripheral region to be interposed between the insulation layer and the second connecting lines.

27. (Previously Presented) The method of claim 23, wherein patterning the active layer and the contact layer includes forming a contact hole on the insulation layer, the active layer, and the contact layer so that the contact hole exposes an end of the second group of the scan lines.

28-29. (Canceled)

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30. (Currently Amended) A substrate for a display device, the substrate comprising:

a first substrate including a display region and a peripheral region adjacent to the display region, the display region having a plurality of pixels, a plurality of data lines, and a plurality of scan lines disposed on a different layer from the data lines;

a driver section including a scan driver circuit and a data driver circuit, the scan driver circuit and the data driver circuit formed in the peripheral region, the scan driver circuit providing the scan lines with a scan driving signal, and the data driver circuit providing the data lines with a data signal; and

a connecting part formed in a portion of the peripheral region adjacent to first ends of the scan lines to be coupled to the first ends of the scan lines, the connecting part including a first group having a plurality of first connecting lines formed from a same layer as the scan lines and a second group having a plurality of second connecting lines formed from a same layer as the data lines, the scan driving signal being applied to the connecting part, wherein each of the first connecting lines partly overlaps with at least one of the second connecting lines.

31. (Currently Amended) A method of manufacturing a liquid crystal display device, the method comprising:

forming a first substrate including a display region and a peripheral region adjacent to the display region, the display region having a plurality of data lines, a plurality of scan lines, and a plurality of pixels, each of the pixels having a switching device electrically coupled to one of the scan lines and one of the data lines, wherein forming a first substrate comprises:

forming a first metal layer in the display region and the peripheral region;

patterning the first metal layer to form the scan lines and gate electrodes branched from the scan lines on the display region, and to form first connecting lines in the peripheral region, the first connecting lines being electrically coupled to first ends of the scan lines;

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forming an insulating layer, an active layer, a contact layer, and a second metal layer on the first substrate on which the scan lines, the gate electrodes, and the first connecting lines are formed; and

patterning the active layer, the contact layer, and the second metal layer to form an active pattern and a contact pattern on each of the gate electrodes, to form the data lines, source electrodes branched from the data lines, and drain electrodes spaced apart from the source electrodes on the display region, and to form second connecting lines in the peripheral region, the second connecting lines being electrically coupled to second ends of the scan lines, wherein each of the first connecting lines partly overlaps with at least one of the second connecting lines;
combining the first substrate with a second substrate; and

interposing a liquid crystal between the first and second substrate,

wherein the first connecting lines are formed from a same layer as the scan lines and the second connecting lines are formed from a same layer as the data lines.